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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Redevelopment of Spectrum	)	
To Encourage Innovation	)	ET Docket No. 92-9
in the Use of New	)	
Telecommunications Technologies	)	

COMMENTS OF MCCAW CELLULAR COMMUNICATIONS, INC.

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TO: The Commission

COMMENTS OF MCCAW CELLULAR COMMUNICATIONS, INC.

McCaw Cellular Communications, Inc. ("McCaw"), by its attorneys, submits its comments in the above-captioned proceeding concerning the redevelopment of spectrum in the 1.8-2.2 GHz band for new emerging technologies. The Commission's stated goal in the Notice of Proposed Rulemaking[1] is "to establish new areas of the spectrum to be used for emerging technologies" by reaccommodating existing users "in a manner that is the most advantageous for these existing users, least disruptive to the public and the most conducive to the introduction of new services."[2]

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[1] 7 FCC Rcd 1542 (1992) ("Notice"). Pursuant to an order in this proceeding released April 1, 1992, DA 92-398, comments are due June 5, 1992, with replies due July 6, 1992. A further order set the comment and reply comment dates as June 8 and July 8, 1992, respectively. Order Denying Request To Defer Comment Dates, DA 92-694 (June 4, 1992).

[2] Notice, 7 FCC Rcd at 1542, 1545.

To achieve this laudable goal, the Commission must carefully assess the benefits of the existing and proposed new services, as well as the spectrum requirements of each and the ability of these services to co-exist on the same or overlapping frequency bands. If sharing is shown to be infeasible, and it is appropriate to relocate existing licensees over some time period to new frequencies, the Commission must also identify the relocation bands, make any necessary modifications to the relevant eligibility and technical rules, and determine how existing users will be compensated for relocating.

Unfortunately, much of the information necessary to this analysis is not referenced in the Notice, or is plainly beyond the scope of this proceeding. For example, the Commission has not even designated which new services will be entitled to operate in the 2 GHz band. McCaw accordingly believes that it is premature to implement any plan to terminate the primary status of existing licensees in the 2 GHz band. McCaw's belief is buttressed by the fact that many promising new technologies are designed to share spectrum with current licensees. The Commission should focus now on encouraging these sharing technologies as the most expeditious means of introducing new services to the public, while minimizing disruption to operations of proven value.

I. SUMMARY

During the past two years, the Commission has given considerable attention to the spectrum requirements of new wireless technologies, including new personal communications services ("PCS"). Such attention has not been unjustified, as the continuing parade of innovative service announcements attests. The Commission currently has pending before it nearly 60 pioneer preference requests from McCaw and other companies, each of which seeks recognition for what is at least asserted to be a telecommunications breakthrough.

The Notice in this proceeding proposes to accommodate the obvious demand for new spectrum opportunities by proposing to revoke, at some point in the future, the primary status of microwave operations in the 1.8-2.2 GHz band. This proposal implies that current microwave operations are less significant to the public at large than the new services that will displace them, that they must be relocated to accommodate those new services, and that alternative frequency arrangements can be made efficiently.

However, the new services that will operate in the 1.8-2.2 GHz band have not yet been specified. The Commission is therefore not in a good position to assess whether existing microwave users should properly be disrupted to facilitate the deployment of the new services. Moreover, it appears that many of the potential services are

capable of sharing spectrum with existing microwave licensees.

McCaw, for example, has proposed two new services that can co-exist with 2 GHz microwave operations: 1) an advanced national data communications superhighway jointly announced with Oracle Data Publishing, Inc. ("Oracle") and Omnipoint Corporation ("Omnipoint");[3] and 2) a Part 16 framework for wireless in-building and on-premises services.[4] In addition, a number of emerging technology proponents have described spread spectrum plans for the introduction of public microcellular networks on a shared basis.[5] These and other spectrum sharing proposals should be the focal point of primary Commission attention and energies in redeveloping the 2 GHz band.

Absent sharing, the cost-benefit analysis is more difficult because the value of accommodating a new service

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[3] Omnipoint Corporation, Oracle Data Publishing, Inc., and McCaw Cellular Communications, Inc. Request for a Pioneer's Preference for a New Data BroadCast Service in the Emerging Technologies Band, GEN Docket No. 90-314, File No. PP-59 (filed May 4, 1992).

[4] See, e.g., Written Testimony of Craig O. McCaw, Chairman of McCaw Cellular Communications, Inc., En Banc Hearing, GEN Docket No. 90-314, at 17-18 (Dec. 5, 1991) ("McCaw En Banc Testimony") and Section IV.B.2 below.

[5] See Written Testimony of Wayne N. Schelle, Chairman of American Personal Communications ("APC") and Chairman of the Telocator PCS Section, before the Subcommittee on Communications of the U.S. Senate Committee on Commerce, Science, and Transportation (June 3, 1992) ("Schelle Testimony").

must be pitted directly against the costs and burdens of relocating existing users. The correct outcome of this conflict cannot be judged until the Commission has completed the steps necessary to accommodate existing microwave users in other bands. Without knowing where existing users will find a home, it is impossible to assess whether existing users can be reaccommodated "in a manner that is the most advantageous for these existing users [and] least disruptive to the public."[6] Consequently, McCaw agrees with the Utilities Telecommunications Council ("UTC") that the Commission must take affirmative steps to revise its rules for the bands expected to serve as the new "homes" for displaced 2 GHz facilities.[7] Such amendments are necessary to permit meaningful, successful use of these bands.

In addition, McCaw believes that the Office of Engineering and Technology ("OET") Report[8] understates the full extent of the impact of any involuntary displacement on licensees in the 2 GHz band, and especially common carriers

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[6] Notice, 7 FCC Rcd at 1545.

[7] See Utilities Telecommunications Council Petition for Rulemaking in the Matter of Amendment of Parts 2, 21, and 94 of the Commission's Rules To Accommodate Private Microwave Systems in the 1.71-1.85 GHz Band and in Bands Above 3 GHz, RM-7981 (filed Mar. 31, 1992) ("UTC Microwave Accommodation Petition").

[8] "Creating New Technology Bands for Emerging Telecommunications Technology," FCC/OET TS92-1 (Jan. 1992) ("OET Report").

employing the 2110-2130 MHz and 2160-2180 MHz frequencies. The OET Report, upon which the Notice relies to measure the difficulty of displacing existing users, underestimates or fails to include many costs, reflecting a misunderstanding of the actual circumstances the licensees must address in system design. Similarly, the Notice itself fails to account for the effects of disruption on those who use 2 GHz facilities to provide beneficial common carrier services, operate their businesses, or perform the functions of state or local government.

The Commission's efforts to expedite the deployment of new wireless technologies are commendable -- and necessary to the development of this country's telecommunications infrastructure. However, McCaw believes that it is certainly not necessary, nor would it be wise, to force existing 2 GHz microwave users into other bands or onto other media as a means of clearing spectrum for as-yet undesignated new technologies. Instead, the Commission should encourage the deployment of new services that maximize the possibility of spectrum sharing. At the same time, it should promptly revise the eligibility and technical rules for other appropriate microwave bands in order to permit 2 GHz licensees to relocate; by doing so, the Commission will enable new 2 GHz service operators to negotiate for the relocation of existing 2 GHz facilities in

those instances where sharing may by uneconomical or impractical. This approach to the introduction of new services in the 2 GHz band will ensure the development of highly spectrum efficient technologies, while protecting the public interest in the efficient operation of existing telecommunications networks.

II. STATEMENT OF INTEREST

McCaw has long regarded itself not as a paging or a cellular company alone but as a *personal communications* company. From its roots in two-way radio and paging services to its present place in the industry as a major provider of cellular service, McCaw has been a company dedicated to meeting its customers' personal telecommunications needs. In McCaw's 1987 annual report, the Chairman's statement to the shareholders aptly summarized the company's vision of cellular as a technology evolving into a wide range of personal communications services:

> Our continued enthusiasm for the business, like our early willingness to commit decisively to the industry, is not based so much upon the industry's current results but instead upon our belief in what the industry will become as it continues to evolve. We believe that cellular technology will help to gradually transform the way we and future generations will think about communications as well as the way we work and live . . . . We will no longer

> have one number in our home, another in our office and another in our car. We will have one number where we can be reached at any time. . . . As these changes occur, we will have entered the era of personal communications. This is the promise of cellular technology and the reason for our enthusiastic commitment to the industry.[9]

The company's overarching goal is to create a network of flexible, fully integrated personal communications services that can be customized to meet consumers' needs. Furthermore, McCaw views itself as a service company responding to its customers' needs with a range of personal communication services, not a company tied to any given technology. Consequently, McCaw is aggressively testing new microcellular personal communications technologies.[10]

In this proceeding, the Commission is exploring how to accommodate new services in the 1.8-2.2 GHz band. McCaw has been an enthusiastic and affirmative proponent of new

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[9] McCaw Cellular Communications, Inc., 1987 Annual Report, April 8, 1988, at 2 (Statement of Chairman Craig McCaw) (emphasis added).

[10] McCaw is uniquely positioned to pioneer new personal communications services. McCaw and its affiliates currently serve approximately 1.8 million subscribers in more than 100 markets. These markets cover nearly 40 percent of the nation's total population and 80 percent of the population in the nation's 50 largest markets and contiguous cellular service areas. McCaw is also the nation's fifth largest paging carrier with subsidiaries operating local and regional paging systems in 13 states. McCaw in addition is a major investor in American Mobile Satellite Corporation and has interests in other mobile telecommunications ventures in the United States and Mexico.

service concepts being deployed in those frequencies. As detailed in Section IV.B.1 below, McCaw joined Omnipoint and Oracle in proposing a data communications superhighway called Data BroadCast Service ("DBCS") for introduction in the 2 GHz spectrum on a shared basis with existing users. McCaw has also advocated an allocation of spectrum for Part 16 wireless in-building and on-premises services in the 2 GHz band with minimal disruption to existing 2 GHz microwave operations.

At the same time as it explores these new opportunities, McCaw is an extensive user of 2 GHz spectrum for microwave networks linking its cell sites and mobile telephone switching offices ("MTSOs") throughout the nation. McCaw currently operates well over 400 microwave links in that band. Accordingly, although McCaw is committed to the development of new wireless technologies, it is also highly sensitive to the legitimate concerns of existing microwave users and their ultimate customers. In this spirit, McCaw offers the following comments on how best to address important 2 GHz redevelopment issues and challenges.

III. THE PUBLIC INTEREST CANNOT BE DISCERNED UNTIL THE VALUE OF NEW SERVICES CAN BE COMPARED TO THAT OF EXISTING USES

The Notice acknowledges "the Commission's mandate to encourage the provision of new technologies and services to

the public and encourage the larger and more effective use of radio in the public interest."[11] This statutory objective extends to existing services as well as promising new technologies. It means that the Commission must evaluate the effects of its proposed actions on existing 2 GHz microwave users and compare the costs of disrupting their operations with the value of new services.

Yet, the Commission launched this proceeding with no certain plans for the nature of the services ultimately to be located in the 2 GHz band. Indeed, the Notice acknowledges the pendency of requests for spectrum for: PCS; data PCS; generic mobile-satellite service; digital audio broadcasting service; and low earth orbit satellites.[12] The Commission expressed its intent to create a general spectrum "pool" that would be available for the development and establishment of new technologies and services. While this approach may be attractive to innovators seeking to create new types of operations, it provides little information about the nature of the services that may find a home in this band.

The failure to identify the nature and value of new services is compounded by the lack of consideration given to

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[11] Notice, 7 FCC Rcd at 1543, citing 47 U.S.C. §§ 157 and 303(g).

[12] Notice, 7 FCC Rcd at 1542-43.

efficient and valuable uses that are currently being made of the spectrum. Except in the case of state and local government operations, neither the Notice nor the OET Report weighs the cost to the public of disrupting current 2 GHz operations in order to accommodate the introduction of as yet undefined new services. In addition, a key question left unanswered by the Notice is whether the telecommunications services provided by incumbent users already constitute the most efficient and valuable use of the targeted spectrum. Because McCaw employs microwave to provide cellular services to the public, it is most familiar with and will address the value of existing 2 GHz microwave use to cellular operators and their customers.

A. The Cellular Industry Provides Services That Are Highly Beneficial to the Public Interest

In less than 10 years, cellular has grown to be a $6 billion industry that has become an essential tool to business, government, health care, law enforcement, emergency services and, increasingly, the average consumer. Its subscribership has jumped to a new record of 7.6 million by the end of 1991, and its geographic availability has surpassed the predictions of many experts with 95 percent of all Americans now having the option to use cellular in their communities.

Cellular brings diversity and new services to the local telephone marketplace because it provides an alternative to wired telephone service. It particularly benefits those whose locations vary continually such as sales people, service representatives, or any other worker whose job is not tied to a desk. Businesses also rely on cellular technology to provide redundancy to traditional telephony. For example, many companies turned to cellular technology during the recent Chicago floods. When the Federal Home Loan Bank of Pittsburgh was hit by lightning last month, causing a complete loss of electrical power, the bank was able to resume business activities almost immediately through the use of cellular phones.

Municipalities and government agencies are also increasingly dependent upon cellular technology to provide public safety and other essential services.[13] Both fixed and mobile cellular services are used by many communities to provide both daily and backup communications for fire,

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[13] In Pittsburgh, for example, cellular phone users have instant portable access to 911 service, emergency turnpike assistance, Red Cross disaster service, Salvation Army disaster service, EMS service, and med-evac service at Allegheny General Hospital. The city processes more than 1,200 cellular 911 calls per month; over the past nine months, 12,789 cellular calls were processed through a service permitting instant access to the Pennsylvania State Turnpike State Police dispatcher.

police, utility, and disaster relief personnel.[14] Some communities have created entire public safety networks accessible by cellular phone.[15] The marriage of cellular with other technologies is rapidly expanding the available public safety service options.

Looking to the future, cellular promises to become the backbone communications network for a new generation of wireless services, including microcellular technology.

B. Microwave Is a Mainstay of the Cellular Radio Telecommunications Service

The Commission has recognized that cellular carriers rely heavily on microwave facilities to form the network backbone to interconnect cell sites with the MTSO.[16] While other transmission media such as leased telephone lines and fiber optic cables may sometimes be available, McCaw has

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[14] For example, 127 of the 131 municipalities in Western Pennsylvania and West Virginia equip their public safety officials with cellular phones. Cellular phones are also used to serve fire, police and sheriff units in jurisdictions such as Snohomish County, Washington and the City of Seattle.

[15] McCaw's Texas markets are using cellular technology and electronic voice mail to contact public safety officials and members of volunteer fire departments. Fifteen cellular facsimile machines are also currently in use in Austin and San Antonio, Texas, enabling firefighters instant access to information on hazardous materials or building floor plans. In Oklahoma City, public safety officials have access to laptop computers that utilize cellular technology to transmit computer data to and from central network locations.

[16] E.g., Notice, 7 FCC Rcd at 1544; OET Report at 11.

found microwave facilities often are best suited for serving as the essential links in the efficient operation of its cellular systems.[17]

By using its own licensed microwave facilities, rather than relying on service provided by another entity such as the local landline telephone company, McCaw has greater control over technical performance, service availability, and cost, and is better able to compete in the marketplace. McCaw can ensure that its microwave facilities meet desired performance levels, and can directly control maintenance and repair activities.[18] These advantages facilitate the ability of McCaw and other cellular providers to offer reliable, quality cellular service on a competitive basis.

If McCaw were forced to rely on landline services, however, it would be obtaining critical facilities from an entity that is often its direct competitor. The interests

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[17] For example, McCaw uses microwave facilities to: 1) link the system MTSO with cell sites and 2) interconnect cell sites to one another. The microwave paths are involved in the actual carriage of the voice portion of a subscriber's call. In addition, the microwave transmissions carry data and administrative information that are essential to setting up the call, monitoring and maintaining the call in progress, and providing necessary billing data.

[18] Similarly, McCaw has greater control over the timing of installation and service initiation than in cases where it must rely on the local telephone company for landline services or where it might want to install its own cables (fiber optic or otherwise). It has also been McCaw's experience that it usually can detect problems much earlier and get a repair crew on site much faster than when it relies on telephone company provided facilities.

of this competitor are furthered by service delays and the imposition of excessive costs for service.[19] McCaw already is forced to rely upon the monopoly landline facilities of its competitor for essential interconnection to the public switched telephone network, with mixed results. Thus, to preserve its ability to compete most effectively, McCaw in many cases has sought to minimize as much as possible its reliance on an entity that has every incentive to undercut McCaw's position.

Furthermore, in many remote locations, there simply are no other alternatives to the use of microwave facilities. Landline facilities may not be available in some areas where cellular service is provided and where cell sites must be interconnected. For example, in national parks and wildlife preserves and over large bodies of water, the use of microwave facilities may represent the sole option for cellular service providers.[20]

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[19] For example, in February 1992, BellSouth filed a proposed tariff revision that would increase rates for T-1 service used by McCaw and other carriers by 300 percent. The affected carriers have protested such action.

[20] In recognition of the important role played by microwave facilities and the frequent need to expedite the initiation of such service, McCaw has sought changes to the Part 21 rules. McCaw Cellular Communications, Inc. Petition for Rulemaking in the Matter of Amendment of Part 21 of the Commission's Rules and Regulations To Facilitate the Licensing and Initiation of Operation of Point-to-Point Microwave Radio Service Facilities, RM-7861 (filed Oct. 16, 1991).

The reliance of cellular carriers on microwave is increasing.[21] New links are being added as cellular systems expand within their service territories and add new cell sites to handle increases in traffic volume. Also, neighboring systems are interconnected to facilitate establishment of the seamless nationwide cellular network. In short, microwave facilities enhance the public's access to efficient, cost effective cellular services.

C. 2 GHz Microwave Frequencies Are Used Extensively by Cellular Carriers

McCaw's experience with operating microwave paths in a number of the available common carrier bands shows that 2 GHz frequencies are particularly well-suited for cellular use. The channelization and bandwidth requirements are consistent with McCaw's transmission needs in many cellular markets. Moreover, the propagation and performance characteristics of 2 GHz frequencies are well-suited to accommodating, on a one-hop basis, the typical distances between cells and between cells and the MTSO.

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[21] While interexchange carriers may be replacing their microwave links with fiber optic cable, cellular carriers either are turning to microwave to initiate new service links or to supplant local telephone landline facilities. This results from the fact that interexchange carriers have much higher volumes of traffic -- and thus higher capacity demands -- that are technically and economically well-suited to deployment over fiber optic facilities. Indeed, for cellular carriers, fiber would be wholly impractical except in perhaps the most densely populated areas of the country.

The favorable propagation characteristics of 2 GHz frequencies are particularly telling on paths over water. Because McCaw has a number of systems located adjacent to or incorporating large bodies of water -- for example, in Florida, Texas, California, Washington, and Oregon -- this is a critical design issue for the company. Large bodies of water tend to cause severe fading problems that significantly limit the maximum effective distance for reliable microwave communications. Successful operations at 2 GHz can be accomplished in such circumstances, whereas higher microwave frequencies may not be practical because of their propagation characteristics over water.

McCaw makes extensive use of 2 GHz facilities to support its cellular operations. The company operates over 440 point-to-point microwave transmitters in the 2110-2130 and 2160-2180 MHz bands. In fact, 2 GHz paths are used in nearly all of its cellular systems, which are located in urban as well as less populated areas of the country. They also serve as a link between cellular facilities serving metropolitan and rural areas.

McCaw's use of 2 GHz has experienced more than a 100 percent increase in the past two years. This reflects the fact that the company, like other cellular operators, has been rapidly building out its cellular systems. As a result, approximately 95 percent of McCaw's 2 GHz facilities

are less than five years old. More than half of the company's 2 GHz microwave radios (54 percent) are less than two years old.

Absent the initiation of this proceeding, McCaw would expect continued substantial growth in its reliance on 2 Ghz operations to support its cellular service offerings to the public.[22] Based on its present calculations of market and aggregate growth, McCaw ordinarily would expect that its use of 2 GHz microwave facilities would follow the same growth trends of the last two years for another five to ten years.

In short, McCaw believes that its cellular systems make extremely efficient use of the 2 GHz band and that the public interest in cellular communications is well-served by the availability of this spectrum for common carrier microwave facilities. It would be unwise to subordinate the continued operation of common carrier microwave to the convenience of new services that have not yet even been defined. At the least, the Commission should not schedule any termination of the primary status of common carrier

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[22] McCaw has not abandoned plans for the installation of new 2 GHz microwave facilities. Despite the fact that the Notice relegated all 2 GHz facilities reflected in filings made after the date of the Notice's adoption to secondary status, some McCaw systems nonetheless made explicit decisions to seek authorizations to operate in this band. These system operators concluded that the performance of microwave facilities at the 2 GHz frequencies outweighed the uncertainty as to McCaw's continuing ability to operate on those paths, justifying the associated risks.

facilities until it has both designated the new services that may operate in the 2110-2130 and 2160-2180 MHz frequencies and carefully assessed the capability of those services to share spectrum with existing microwave operations.

IV. THE COMMISSION SHOULD CONSIDER, ENCOURAGE, AND PREFER EMERGING TECHNOLOGIES THAT CAN SHARE SPECTRUM WITH EXISTING 2 GHz LICENSEES

A. The Notice Proposes Forced Relocation of 2 GHz Licensees Without Considering Spectrum Sharing Technologies

The Notice assumes that wholesale relocation of existing 2 GHz licensees is necessary to accommodate new, unspecified emerging technologies. Deadlines for vacating the band are proposed. Minimal procedures for implementing relocation are outlined. Costs of relocation are preliminarily identified.

With this focus on relocation, the Notice gives no attention to spectrum sharing possibilities. Nor does the Notice invite comments on how sharing could be implemented. The Notice does not even encourage sharing as a spectrum efficient alternative that could facilitate new services without disruptions to established services.

McCaw believes that this fundamental omission from the scope of the Notice's inquiry is a serious flaw. It sends all the wrong messages. It presupposes a mutual exclusivity

between new and existing services. It ignores significant technological innovations embodied in requests pending before the Commission.

B. Spectrum Sharing Opportunities Should Be the Focus of Primary Commission Attention Rather Than Being Relegated to an Afterthought in the Emerging Technologies Proceeding

Spectrum sharing offers the best of both worlds for the Commission. Existing services need not face massive disruptions and dislocations. New services can be introduced on a spectrum efficient basis. Competing interests of PCS proponents and microwave licensees can be reconciled and accommodated.

There is no shortage of serious spectrum sharing proposals pending before the Commission.[23] Part of the appeal of many PCS technologies has been the prospect for

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[23] Indeed, two of the early advocates of PCS, Millicom and APC, contemplated that such services would share spectrum with existing services. See PCN America, Inc., a Subsidiary of Millicom Incorporated, Petition for Rulemaking for Amendment of Section 2.106 of the Commission's Rules To Allocate Spectrum for a Personal Communications Network, GEN Docket 90-314, at 21 (filed Nov. 7, 1989); American Personal Communications Request for a Pioneer's Preference in the Licensing Process for Personal Communications Services, GEN Docket 90-314, at 8-22 (filed Jul. 30, 1991). In testimony on June 3, 1992, before the Subcommittee on Communications of the Senate Committee on Commerce, Science, and Transportation, Wayne Schelle, Chairman APC and Chairman of the Telocator PCS Section, confirmed his expectation that PCS and existing microwave users could largely continue to share frequencies in the 2 GHz band. He stated his belief that "very few incumbent microwave users would need to relocate to accommodate PCS in this country." Schelle Testimony at 3.

their initiation without driving existing operations from their assigned frequencies. To date, there has been a substantial investment of time and resources in achieving this goal. The public interest will be best furthered if the Commission provides continued incentives to perfect that "ideal" arrangement.

McCaw, for its part, has offered two proposals that contemplate some degree of spectrum sharing: the Data BroadCast Service jointly planned with Oracle and Omnipoint and a Part 16 service outlined in prior submissions. In addition, many of the pending PCS pioneer preference requests contemplate spectrum sharing with 2 GHz licensees as documented below. It is essential that the Commission explore and encourage services like these proposals that can exist in a shared spectrum environment.

1. Data BroadCast Service

On May 4, 1992, Omnipoint, Oracle, and McCaw submitted a pioneer preference request proposing a system that would provide a high speed, high volume information "superhighway" to address the public's needs -- the Data BroadCast Service ("DBCS"). This service would: 1) enable many important applications to be delivered at a fraction of the cost of fiber, satellite, or landline distribution; 2) be

sustainable by private funding sources; and 3) could commence operations within 24 months.

DBCS is a distinctive service falling under the broad umbrella of services to be considered by the Commission as "personal communications services." DBCS efficiently utilizes spread spectrum sharing techniques to co-exist with incumbent 1850-1990 MHz licensees. The proposed service permits the transmission of data at very high speed, but has modest spectrum requirements -- requiring only 10 MHz of shared spectrum.

Thus, DBCS is an innovative, efficient service that can be deployed without displacing existing users of the band. The service represents a significant advance over the state of the art in presenting a cost effective, high speed, high volume, wireless data superhighway, without consuming massive spectrum resources. Indeed, its spectrum sharing capabilities are the very sort of development that the Commission should encourage and prefer in assessing emerging technologies options.

2. Part 16 PCS Service

Wireless PBX systems, enhanced residential cordless telephone services, and wireless data networks (wireless LANs) have generated a high degree of interest by both consumers and manufacturers. A "Part 16" regulatory scheme